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ABSTRACT

The invention provides novel amino acid compounds of use in detecting and evaluating brain and body tumors. These compounds combine the advantageous properties of 1-amino-cycloalkyl-1-carboxylic acids, namely, their rapid uptake and prolonged retention in tumors with the properties of halogen substituents, including certain useful halogen isotopes including fluorine-18, iodine-123, iodine-125, iodine-131, bromine-75, bromine-76, bromine-77 and bromine-82. In one aspect, the invention features amino acid compounds that have a high specificity for target sites when administered to a subject in vivo. Preferred amino acid compounds show a target to non-target ratio of at least 5:1, are stable in vivo and substantially localized to target within 1 hour after administration. An especially preferred amino acid compound is [^{18}F]-1-amino-3-fluorocyclobutane-1-carboxylic acid (FACBC). In another aspect, the invention features pharmaceutical compositions comprised of an α-amino acid moiety attached to either a four, five, or a six member carbon-chain ring. In addition, the invention features analogs of α-aminoisobutyric acid.